BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,585	01/04/2002	Hongyi Hubert Chen	21245-300201	2202

23624 7590 07/12/2004

MARVELL SEMICONDUCTOR, INC.
INTELLECTUAL PROPERTY DEPARTMENT
700 FIRST AVENUE, MS# 509
SUNNYVALE, CA 94089

EXAMINER	
ABRAHAM, ESAW T	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/039,585	CHEN, HONGYI HUBERT	
	Examiner	Art Unit	
	Esaw T Abraham	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04/01/02* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims **1-18** are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims **1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Morsberger (U.S. PN: 6,560,746).

As per claims **1 and 15,** Morsberger teaches or disclosed a CRC generation circuit and a method of CRC generation comprising an input/output register means, a number of XOR gates and a coupling means (CM) that feeds predetermined ones of the output lines of the output register means and output lines of the input register means as inputs to the respective XOR gates and further a matrix representation of the state change based on the selected CRC polynomial is

set up and evaluated (see abstract). Further, Morsberger in figure 1 teaches a serial CRC generation circuit realized on the basis of the CRC polynomial in equation (1a) comprises a number N of shift registers in series connection, a number N of XOR gates (logic gates) whereby a bit stream SI is input serially to the XOR gate, depending on the selection of N and equation (1a). The XOR gates (logic gates) are provided between each two shift registers and depending on the feedbacks from the XOR gate to the individual shift registers (flip-flops), a desired CRC code is output from the shift register of the final stage (see col. 1, lines 7-20). Furthermore, Morsberger in figure (1c) teaches a general configuration for a parallel CRC generation circuit whereby the parallel generation circuit generates a CRC code of length N defined by the respective CRC polynomial according to the said equation (1a). Morsberger **does not explicitly teach** programming subset of XOR (logic gates) to have a value zero. **However,** Morsberger teaches that a when designing (programming) a CRC generation circuit for generating a CRC code of length N, a CRC polynomial is used and the designer (programmer) selects the CRC code to be generated by selecting the feedbacks, i.e. by selecting N and which of the coefficients are 0 or 1 depending on the desired CRC code and further in figure (1a) this selection of coefficients is reflected by the feedback and the insertion of the particular XOR gates between respective two shift registers (see col. 1, lines 37-57) which Morsberger's methods of generating CRC generators is basically the same as the applicants' methods of programming registers. **Therefore,** it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to use the method of programming or designing CRC generation circuit as taught by Morsberger. **This modification** would have been obvious because a person having ordinary skill in the art would have been motivated to do so because employing a process for

programming registers to have a value of zero or one are well known features of CRC generators.

As per claim **2,** Morsberger teaches all the subject matter claimed in claim 1 including Morsberger in figure 1b teaches a serial CRC circuit comprising selection of coefficients in a CRC polynomial reflected in the circuit configuration by the feedbacks from the shift register C.sub.12 to the other shift registers C.sub.0 -C.sub.11 via the XOR gates between the individual shift register C (see col. 2, lines 15-21).

As per claim **3,** Morsberger teaches all the subject matter claimed in claim 1 including Morsberger in figure 1b teaches a serial CRC circuit comprising selection of coefficients in a CRC polynomial reflected in the circuit configuration by the feedbacks from the shift register C.sub.12 to the other shift registers C.sub.0 -C.sub.11 via the XOR gates between the individual shift register C. Further, Morsberger teach a CRC having length 13 is output serially at the "CRC 13 serial out" after the X bits have been serially input (see col. 2, lines 15-23).

As per claims **4-6,** Morsberger teaches all the subject matter claimed in claim 1 including Morsberger in figure (1b) teaches a serial CRC circuit comprising selection of coefficients in a CRC polynomial reflected in the circuit configuration by the feedbacks from the shift register C.sub.12 to the other shift registers C.sub.0 -C.sub.11 via the XOR gates between the individual shift register C (see col. 2, lines 15-21). Morsberger **does not explicitly teach** or silent to disclose a set of multiplexers for selecting inputs for shifting data to the next shift register. However, this feature is deemed to be known in the art or inherent for CRC generators. **Therefore,** it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to include set of multiplexers for selecting inputs. **This modification**

would have been obvious because a person having ordinary skill in the art would have been motivated to do so because providing multiplexers within the CRC generators for selecting inputs for shifting data are well known features of CRC generators.

As per claim 7, Morsberger teaches all the subject matter claimed in claim 1 including Morsberger in figure (1a) shows the principle of a serial CRC generation circuit realized on the basis of the CRC polynomial in equation (1a) and further the CRC generation circuit comprises a number N of shift registers in series connection (see col. 1, lines 45-49).

As per claims **8 and 16,** Morsberger teaches all the subject matter claimed in claim 1 including Morsberger in figure (1b) teaches a serial CRC circuit comprising selection of coefficients in a CRC polynomial reflected in the circuit configuration by the feedbacks from the shift register C.sub.12 to the other shift registers C.sub.0 -C.sub.11 via the XOR gates between the individual shift register C. Further, Morsberger teach a CRC having length 13 is output serially at the "CRC 13 serial out" after the X bits have been serially input (see col. 2, lines 15-23).

As per claims **9-11,** Morsberger teaches all the subject matter claimed in claim 8 including Morsberger in figure (1b) teaches a serial CRC circuit comprising selection of coefficients in a CRC polynomial reflected in the circuit configuration by the feedbacks from the shift register C.sub.12 to the other shift registers C.sub.0 -C.sub.11 via the XOR gates between the individual shift register C (see col. 2, lines 15-21). Morsberger **does not explicitly teach** or silent to disclose a set of multiplexers for selecting inputs for shifting data to the next shift register. However, this feature is deemed to be known in the art or inherent for CRC generators. **Therefore,** it would have been obvious to a person having an ordinary skill in the art at the time

the invention was made to include set of multiplexers for selecting inputs. **This modification** would have been obvious because a person having ordinary skill in the art would have been motivated to do so because providing multiplexers within the CRC generators for selecting inputs for shifting data are well known features of CRC generators.

As per claim **12,** Morsberger teaches all the subject matter claimed in claim 8 including Morsberger in figure (1a) shows the principle of a serial CRC generation circuit realized on the basis of the CRC polynomial in equation (1a) and further the CRC generation circuit comprises a number N of shift registers in series connection (see col. 1, lines 45-49).

As per claims **13 and 17,** Morsberger teaches all the subject matter claimed in claim 1 including Morsberger teaches the CRC generation circuit in Morsburger includes a set of computer-readable instructions stored on a computer-readable storage medium for parallely generating a CRC code of length N defined as a CRC polynomial (CRC) and the coefficients are 0, 1 depending on the CRC code to be formed, parallely for a number T of input bits of a data stream (see claim 2). Morsberger **does not explicitly teach** a processor and one or more of stored sequences of instructions executed by the processor. **Nevertheless,** as would have been well known to one ordinary skill in the art at the time the invention was made, a processor is required in order to interpret and execute instructions. **Accordingly,** it would have been obvious to one ordinary skill in the art to include a processor in a computer because such features would have been required in order interpret and execute instructions from the computer-readable storage medium.

As per claims **14 and 18,** Morsberger teaches all the subject matter claimed in claim 8 including Morsberger teaches the CRC generation circuit in Morsburger includes a set of

computer-readable instructions stored on a computer-readable storage medium for parallely generating a CRC code of length N defined as a CRC polynomial (CRC) and the coefficients are 0, 1 depending on the CRC code to be formed, parallely for a number T of input bits of a data stream (see claim 2). Morsberger **does not explicitly teach** a processor and one or more of stored sequences of instructions executed by the processor. **Nevertheless,** as would have been well known to one ordinary skill in the art at the time the invention was made, a processor is required in order to interpret and execute instructions. **Accordingly,** it would have been obvious to one ordinary skill in the art to include a processor in a computer because such features would have been required in order interpret and execute instructions when reading data from the computer-readable storage medium.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US PN: 5,598,424 Erickson et al.

US PN: 6,192,498 Arato

US PN: 5,132,975 Avaneas

US PN: 6,295,626 Nair et al.

US PN: 6,631,488 Stambaugh et al.

4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (703) 305-7743. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Esaw Abraham

Esaw Abraham

Art unit: 2133

Gregory J. Lamarre
for

Albert DeCady
Primary Examiner